The 10th wipo conversation on intellectual property (IP) and frontier technologies

A 10ª conversa da ompi sobre propriedade intelectual (pi) e tecnologias fronteiriças

Alessandro Aveni[1]
https://orcid.org/0000-0001-6266-6818
http://lattes.cnpq.br/0679425851663633
Universidade de Brasília, UnB, DF, Brasil
E-mail: alessandro@unb.br

Check for updates

Abstract

The paper is a research paper about artificial intelligence (AI) and frontier technologies World Intellectual Property Organization (WIPO) sessions that started in 2019 and reached in November the tenth conference. The research is willing to discuss the link between intellectual property and new technologies and understand the actual international trend. The tenth session, November 2024, focused on Generative AI: IP and Outputs and underlined the reevaluation of Copyright Standards, Consensus on Transparency Tools, and Economic and Ethical Considerations or ethical obligations. Mechanisms like "pay-per-use" models for AI training datasets ensure fair compensation for original content creators, global collaboration and policy harmony, sector-specific challenges and solutions, and some action points. Concluding the paper, there are some considerations about the WIPO actual trend and the AI and new technology in the WIPO system.

Key-words: WIPO sessions. Generative AI. AI outputs. Copyright standards. Global collaboration.

Resumo

O artigo é uma pesquisa sobre inteligência artificial (IA) e tecnologias de fronteira nas sessões da Organização Mundial da Propriedade Intelectual (OMPI) que começaram em 2019 e chegam em novembro à décima conferência. A pesquisa pretende discutir a ligação entre propriedade intelectual e novas tecnologias e compreender a atual tendência internacional. A décima sessão, em novembro de 2024, centrou-se na IA generativa: PI e resultados e, como resultado, sublinhou: Reavaliação dos padrões de direitos de autor, Consenso sobre ferramentas de transparência, Considerações económicas e éticas ou obrigações éticas. Mecanismos como modelos de "pagamento por utilização" para conjuntos de dados de formação em IA, garantindo uma compensação justa aos criadores de conteúdos originais, Colaboração Global e Harmonização de Políticas, Desafios e Soluções Específicos do Setor e alguns Pontos de Ação. Concluindo o artigo, há algumas considerações sobre as sessões da OMPI e sua atual tendência de inclusão da AI e novas tecnologias no sistema ONPI.

Palavras-chave: *Sessões da OMPI. IA generativa. resultados de IA. padrões de direitos autorais. colaboração global.*

---

[1]Bacharel em Administração e Mestre em Geografia pela Universidade de Brasília-UnB, Doutor em Ciências Políticas pela Universidade Statale de Milano e em Administração pela Universidade Cormerciale Luigi Bocconi di Milano ambas na Itália revalidado na UNB em Brasilia. Possui também Especialização em Estratégia Empresarial pela Fundação Getúlio Vargas-FGV.

1. Introduction

The paper aims to discuss artificial intelligence (AI), frontier technologies, and intellectual property. The rapid growth of technologies like artificial intelligence, blockchain, and the Internet of Things (IoT) is transforming industries worldwide. These innovations rely on intellectual property (IP) systems for protection, commercialization, and regulation. Existing IP laws are struggling to keep pace with these advancements in disputes over ownership, rights, and the ethical use of innovations. Addressing this theme ensures IP framework will evolve to reflect current technological realities.

There is a tension between fostering innovation and ensuring robust protection for creators and inventors. The main problem is to understand the intersection of AI, frontier technologies, and intellectual property (IP) it lies in adapting existing IP frameworks to address the challenges and opportunities posed by these technologies and to evolve systems that balance these interests.

The paper aims to analyze the tenth World Intellectual Property Organization (WIPO) conversation. The relevance of contemporary technological advancements justifies discussing that theme. The theme aligns with the United Nations Sustainable Development Goals (SDGs), particularly Goal 9: Industry, Innovation, and Infrastructure. Strengthening IP systems to balance innovation and protection supports sustainable economic growth and technological progress.

Another justification for analyzing AI and new technologies in WIPO sessions lies in the economic and social impact of frontier technologies. Intellectual property is a cornerstone of economic growth and cultural enrichment. It is common to believe that a robust IP system fosters innovation by incentivizing creators and inventors while ensuring their contributions are protected. Simultaneously, overly rigid protection mechanisms risk stifling innovation by restricting access to foundational technologies. This theme addresses how balanced policies can drive innovation while respecting creators' rights, benefiting both industry and society.

2. Methodology

The methodology used is the discussion paper standard. Discussion paper research explores a specific topic: the 10th WIPO session in a detailed yet preliminary way. The research discussion methodology presents preliminary research findings and ongoing research. It allows to get feedback from peers before formally publishing results.

The paper has three sections. Section one presents WIPO sessions, and the second the recent session of November 2024. The third section analyses the presentations as a trend, and the resulting session summarizes and analyses the outcomes of the WIPO discussion. A concluding section ends the paper.

3. Discussion

The IP system is necessary because innovation often transcends national borders, but IP frameworks are limited or National, leading to inconsistencies. Collaborative approaches involving policymakers, creators, and tech companies are essential to harmonize IP systems internationally, reducing conflicts and fostering global innovation (Cuntz, A., Fink C. and Stamm H. 2024, Cuntz, A. and Peuckert, J. 2023), Discussing this theme provides a platform to identify best practices and align efforts across countries.

Protecting the rights of creators is not merely an economic and legal issue but also an ethical one. With AI generating art, music, and questions about originality and ownership arise. Balancing these rights while promoting technological advancements

is crucial to preserving cultural diversity and ethical standards in innovation. Addressing this tension requires input from legal experts, technologists, and industry leaders. Policymakers must collaborate with creators and tech companies to design adaptive and future-proof IP policies.

The WIPO Conversation on Intellectual Property (IP) and Frontier Technologies is a series of sessions hosted by the World Intellectual Property Organization (WIPO) to address the interplay between evolving technologies like artificial intelligence (AI) and intellectual property systems. These conversations began in 2019 and have become a platform for dialogue among policymakers, legal experts, creators, and technologists. The focus is to explore how IP can adapt to technological advancements and continue fostering innovation while protecting creators' rights.

3.1. WIPO Conversations

The core themes and Focus Areas of AI and IP Protection are the central discussion. The WIPO discussions have been about whether and how AI-generated works can be protected under existing IP laws. Questions revolve around originality, the role of human creativity, and the potential need for new IP categories to cover machine-generated outputs (Aveni, Ulisse, 2024).

Here is the WIPO session by date (Aveni, Ulisse, 2024):
- First Session Geneva, September 27, 2019
- Second Session Virtual meeting, July 7 to 9, 2020
- Third Session Geneva, November 4, 2020
- Fourth Session Data and IP September 22 to September 23, 2021 Virtual
- Fifth Session New Technologies for Intellectual Property Administration April 5 to April 6, 2022 Virtual
- Sixth Session Frontier technologies – AI Inventions, September 21 to September 22, 2022 (Geneva, Switzerland) Hybrid
- Seventh Session Intellectual Property and the Metaverse, March 29 to March 30, 2023 (Geneva, Switzerland) Hybrid
- Eight Session Conversation on Intellectual Property (IP) and Frontier Technologies September 20 to September 21, 2023 (Geneva, Switzerland) Hybrid
- Ninth Session Conversation on Intellectual Property (IP) and Frontier Technologies
- Training the Machines – Bytes, Rights and the Copyright Conundrum, March 13 to March 14, 2024 (Geneva, Switzerland) Hybrid
- Tenth Session Intellectual Property (IP) and Frontier Technologies. November 5–6, 2024, focused on Generative AI: IP and Outputs.

WIPO warned that in 2020, machine learning algorithms and swarm intelligence accounted for the largest number of software patents granted. More than 90% of AI patent applications fit in IP5. However, the World Intellectual Property Organization (WIPO) organized ten discussion sessions on the relationship between AI and IP, divided by topic. These sessions did not present a position related to artificial intelligence (AI) due to the agency's neutral position on AI registration rights.

The first Session (2019) Introduced the overarching themes, focusing on whether AI-generated outputs could and should be protected under IP laws, and subsequent Sessions (2020–2023) Explored deeper issues, including AI's impact on copyright, patents, and trademarks. Delved into the challenges posed by blockchain, the Internet of Things, and machine learning on existing IP frameworks. Highlighted initiatives for capacity-building and education for stakeholders (Aveni & Ulisse, 2024)

The first three sessions of the WIPO Conversation reviewed AI and IP policy and discussed general issues. There is a general acceptance of the patentability of AI computer programs as long as they meet the traditional criteria of novelty, inventive

step, and industrial applicability. Program registration is open to AI-generated programs that are eligible for patents. Proprietary issues are the manner of assessment of the invention or the disclosure requirements. However, AI innovations are often the result of black-box machine operations. The lack of transparency in the process makes it impossible to disclose innovations in sufficient detail to comply with existing laws. Companies protect training data used for machine learning because the model can be copied by a person having ordinary skill in the art (PHOSITA) and replicated. That defeats the purpose of protecting the invention (Aveni & Ulisse, 2024).

AI inventions consisting of new algorithms and mathematical models are not patentable. The invention becomes patentable, with AI algorithms if an invention is found to be eligible. Because training data, training processes, and adaptation methods are not transparent, the demand for disclosure requirements and the increasing demand for detailed information in AI-related patent applications have led to many AI systems being protected by trade secrets that belong to companies. In other words, AI is a new way of developing invention processes, and the rights are distributed between the AI developers, who calibrate the instrument, and the inventors who use AI to certify a final invention (Aveni & Faria, 2024 2024). That means that the invention process using AI is different from a normal innovation process that is the basis for disclosure requirements (Aveni & Ulisse, 2024).

The fourth session addressed the topic of "Data, beyond AI", in a fully interconnected world. The discussion focused on the economic value of data. This has traditionally been associated with the production of physical goods and services. In a world of increasing digitalization, intangible assets and data are rapidly growing in importance and are becoming central features of the economic system. Data-related activities areno longer mere sidelines. Some of the background to the current debates around data were discussed, including what data is and why this intangible asset is increasingly important and is changing the way we do business, innovate, and create.

The Data Regulatory Framework was also discussed in that session. Several regulatory frameworks can be applied to data, depending on the interest or value that is intended to be regulated. Regulatory approaches can also differ between cultures. I had a panel that presented the various policy elements relevant to data. What are the rules of data regulation that are important to consider? What is the difference between control and ownership of data? Data for the public good security, privacy, and competition law. Cultural approaches to data (Aveni & Ulisse, 2024).

The fifth session addressed new technologies and their potential uses in IP administration and registration systems and in the WIPO system, as well as the disruption they may cause to the IP system. It encouraged information sharing among all stakeholders, from IPOs to private companies, and the sharing of diverse views from IP professionals, innovators, creators, and individuals. It analyzed the uses of AI in IP administration and registration. It encouraged information sharing among all stakeholders. Finally, there was a discussion section on Data and IP (Aveni, Ulisse, 2024)

The sixth session addressed the topic of AI inventions. There is the possibility of inventions generated autonomously by AI. DABUS is a patented case of AI. AI houses trillions of computational neurons within large artificial neural systems that emulate the limbo-thalamo-cortical loop. The model uses arrays of trainable neural modules, each containing interrelated memories representing some conceptual space. An electro-optical attention window scans the entire set of neural modules for so-called "hot buttons." These are neural modules. They contain impactful memories and trigger false synaptic disturbances in the system. Some participants stated that regarding

DABUS and AI algorithms, the term artificial intelligence is an unfortunate label because there is nothing intelligent about AI. AI is a model that uses statistical optimization software to manage large data sets.

There is no justification for granting rights to a machine because an AI system does not function autonomously and needs all the human interaction that led to the construction or operation of that system, from madness to electrical power support. Saying that AI is autonomous will exclude the manufacturers of hardware, software, and the maintenance of the systems. But a law should be introduced for computer-generated works. Copyright is granted to the person who made the generation or creation of the work possible. Unfortunately, the same legal concept could be applied to all patents, industrial secrets, and inventions of products or services generated by AI (Aveni & Uslisse 2024).

The seventh session discussed the theme that "All information seems like noise until you crack the code" and plans and intellectual property stories from the architects building the Metaverse. Regarding the IP Stories of the Metaverse, many existing companies are exploring how to create a presence, NFTs of sneakers and handbags are just one example. Entirely new entities such as DAOs are emerging. Engineers and manufacturers are using digital twins to optimize designs and processes. Content creators, artists, and young influencers are creating virtual artworks, spaces, and pop-ups. Another panel discussed the future of IP in the digital economy and a fully virtual world approach. The economic importance of the digital economy cannot be underestimated because tit is highlighted by the Metaverse.

Based on intangible assets, IP will be a key factor in realizing this potential. What does this mean for the future development of IP, including emerging challenges in the context of the global economy? In the Metaverse, copyright laws still apply. The Metaverse however raises IP issues across the full range of IP rights, IP registration, and IP enforcement. The metaverse and its use of digital twins were discussed at the end. A digital twin is a virtual copy or simulation of a physical object, system, or process (Aveni & Ulisse 2024).

The eighth talk focused on Generative AI. The Rapid Rise of Generative AI: Opportunities and Challenges Ahead Explaining why generative AI is disrupting the paradigm of AI development. The talk will take the audience on a journey into what the future may hold. An introduction to generative AI will be provided, including an overview of the technical aspects of the technology, its potential applications in various industries, its current limitations, and a look at what may lie ahead. The best approach to protecting generative AI models with IP depends on several factors, including the nature of the AI, the jurisdiction, and the specific elements intended for protection.

Patents, trade secrets, and copyrights all play an important role. The Invention Process Generative AI can complement human innovation by generating new ideas and solutions. Humans still play a critical role in the invention process, defining problems, setting goals, and determining how AI-generated insights are applied (Aveni & Ulisse 2024).

The ninth session discussed a range of perspectives on the evolving landscape of AI, creativity, and intellectual property. It will illuminate the complexities and potential tensions that arise at the intersection of AI development, artistic creation, and the new equilibrium they seek. I will have several presentations: 1) Training Data. Training data is the fuel that powers the AI steam engine. Why is it important, and how does training data enable AI systems to generate insights?

An overview before diving into some of the technical aspects relevant to ongoing discussions around IP and machine unlearning. 2) Fair Compensation for Creatives.

This presentation will explore how fair compensation for creators could be defined and how that compensation could be collected and distributed; 3) Generative AI, Training Data, and Innovation – how large language models are accelerating scientific advances. 4) Generative AI: Navigating IP Generative AI is widely adopted by organizations and businesses, but it is clear that there are many uncertainties regarding IP.I (Aveni & Ulisse 2024).

3.2 WIPO Conversation on Intellectual Property (IP) and Frontier Technologies: Tenth Session

The Tenth Session of the WIPO Conversation on Intellectual Property (IP) and Frontier Technologies, held on November 5–6, 2024, focused on "Generative AI: IP and Outputs". The session debated implications for copyright infringement, licensing, and artistic rights faced in another session. Panels enter deeper into the Generative AI question and examine tools for identifying AI outputs and shared global practices for managing IP issues. The session brought together policymakers, legal experts, industry leaders, and creatives to address how advancements in AI intersect with intellectual property rights and creative industries, debating its implications for copyright infringement, licensing, and artistic rights.

The preliminary program WIPO conversation on intellectual property (IP) and frontier technologies Tenth Session Geneva started from patentability dilemmas to copyright conundrums: Economic perspective. The presentation placed the current debate on AI and copyright into a broader economic perspective. By comparing the nature of AI-generated creations and inventions, it discussed potential policy rationale for restricting IP protection to human outputs only considering their impact on the balance of incentives, productivity, and economic growth.

Panel 1 discussed the current copyright landscape. Starting from the question of where AI fits in, the panel explored how generative AI blurs the line between the work of a human and AI and dive into diverse approaches and questions related to human authorship and how this applies to AI outputs. Case study 1: Frightening and fascinating AI. AI can offer authors new economic opportunities with the potential to advance creativity and bring creative works to new and existing audiences in a new way. This presentation showcased how creators are using AI and IP questions they have about their creations. Presentation: Back to the Future explored how past art technologies can inform what we think about AI. What can we learn from the previous tech waves and tech disruptions? How has the IP system adapted to new technologies in the past?

Panel 2 discussed Pay-per-use. AI outputs, training data, and the infringement question. Presentation: How can we taste AI; sweet, bitter, or sour? Many artists have expressed genuine concerns that the rapid development of AI will displace human authors and lead to loss of control and marketability and overall dilution of human art. On the other hand, AI continuously proceeds its steps forward, which would surely offer significant potential. Artists have both ways, to utilize and take up a new technology as an aid or part of their expressions, or just ignore it.

The presentation talked about some IP concerns and how policymakers worldwide can address them to help artists thrive in the age of AI. Presentation: Deepfakes, cheap fakes, voice jacking, and other AI manipulations AI is increasingly used to create deepfake sound recordings or images based on the artist's name, voice, and likeliness without their consent. The presentation looked at some of the most prominent cases and discussed how copyright law can adapt to meet the present and future challenges.

Presentation: Technical cooperation for the benefit of all the presentation underlined the role of IP in limiting biases and the importance of having policies to ensure AI tools are monitored and used in ways that help ensure outputs do not reinforce biases and uphold fairness outcomes for everyone, everywhere.

Panel 3 discussed connecting the dots: Industry solutions to identify AI outputs. As AI advances and becomes more available, there is a growing interest in accessible, easy-to-use, and interoperable transparency and authenticity solutions to identify and mark AI-generated content. The panel looked into the existing and potential tools to better manage the dissemination of AI outputs and protect creators and artists. Presentation: Solving the "Mickey Mouse" problem.

While it is difficult to establish a straightforward connection between images in the training data and the end output, AI researchers found that AI models can reproduce almost exact copyrightable characters or distinct art pieces and replicate the style of famous artists with a short and simple text prompt. The speaker addressed those cases where memorization and similarity are obvious and the implications of such cases on copyright law.

There was also a final sharing session. Open floor interventions and discussion: exchange of current practices between IP Offices and Member States in IP protection of AI outputs.

Table 1 - Two-day meeting presentations

WIPO 10th session presentations	
WIPO/IP/CONV/GE/2/24/OP02	Presentation - Open Floor: Mr. Israel Cedillo Lazcano, General Director of Research, Universidad de las Américas Puebla, Mexico
WIPO/IP/CONV/GE/2/24/OP03	Presentation - Open Floor: Ms. Ana Cisneros, IP Specialist and AI data training agent, Mexico
WIPO/IP/CONV/GE/2/24/OP04	Presentation - Open Floor: Mr. Danny Friedmann, Associate Professor of Law, Peking University School of Transnational Law, China
WIPO/IP/CONV/GE/2/24/OP08	Presentation - Open Floor: Ms. Constance Herreman Follain, Senior Legal Advisor, CISAC, France
WIPO/IP/CONV/GE/2/24/OP10	Presentation - Open Floor: Ms. Anja Neubauer, Lawyer, Neubauer Law, Germany
WIPO/IP/CONV/GE/2/24/OP11	Presentation - Open Floor: Ms. Ana Ramalho, Senior Copyright Counsel, Google, the Netherlands
WIPO/IP/CONV/GE/2/24/OP14	Presentation - Open Floor: Ms. Ana Ramalho, Senior Copyright Counsel, Google, the Netherlands
WIPO/IP/CONV/GE/2/24/OP18	Presentation - Open Floor: Mr. Tom Utum, Law graduate and digital assets intern, UNIDROIT, Nigeria
WIPO/IP/CONV/GE/2/24/P1	Presentation - From patentability dilemmas to copyright conundrums: Economic prospective : Mr. Carsten Fink, Chief Economist, World Intellectual Property Organization (WIPO)

WIPO/IP/CONV/GE/2/24/P1 1	Presentation: Ms. Jane C. Ginsburg, Morton L. Janklow, Professor of Literary and Artistic Property Law, Columbia Law School, United States
WIPO/IP/CONV/GE/2/24/P1 2	Presentation: Ms. Zhu Ge, Presiding Judge, BIC's First Comprehensive Division, China
WIPO/IP/CONV/GE/2/24/P1 3	Presentation: Mr. Vojtech Chloupek, Partner, Bird&Bird, Czech Republic
WIPO/IP/CONV/GE/2/24/P1 4	Presentation: Mr. Barry Scannell, Partner, William Fry LLP, Ireland
WIPO/IP/CONV/GE/2/24/P1 5	Presentation: Ms. Concepcion Saiz Garcia, PDI-Titular d'Universitat Coordinador/a Curs, University of Valencia, Spain
WIPO/IP/CONV/GE/2/24/P2	Case study 1 - Frightening and fascinating AI: Mr. Eugene Mapondera, Creative Director, Kay Media Africa, Co-founder, Comexposed, Zimbabwe
WIPO/IP/CONV/GE/2/24/P2 1	Presentation: Ms. Dorien Herremans, Associate Professor, Singapore University of Technology, Singapore
WIPO/IP/CONV/GE/2/24/P2 2	Presentation: Mr. Ygor Valerio, Partner, CQS/FV Advogados, Brazil
WIPO/IP/CONV/GE/2/24/P2 3	Presentation: Ms. Zhang Linghan, Law Professor, China University of Political Science and Law, and UN High-Level Advisory Body Member on AI, China
WIPO/IP/CONV/GE/2/24/P2 4	Presentation: Mr. Desmond Oriakhogba, Associate Professor in Intellectual Property, University of the Western Cape, South Africa
WIPO/IP/CONV/GE/2/24/P3	Presentation - Back to the Future: Ms. María Vásquez Callo-Müller, Postdoc, University of Lucerne, Switzerland/Peru
WIPO/IP/CONV/GE/2/24/P3 1	Presentation: Mr. Andrew Jenks, Director of Media Provenance, Microsoft, Executive Chair, C2PA, United States
WIPO/IP/CONV/GE/2/24/P3 2	Presentation: Mr. Go Choi, CEO, MARKANY, Republic of Korea
WIPO/IP/CONV/GE/2/24/P3 3	Presentation: Mr. Mark Isherwood, Digital Data Exchange, LLC (DDEX), United Kingdom
WIPO/IP/CONV/GE/2/24/P3 5	Presentation: Mr. Rijul Gupta, CEO, DeepMedia, India
WIPO/IP/CONV/GE/2/24/P4	Presentation - How can we taste AI; sweet, bitter, or sour?: Ms. Ogawa Akiko, Director of the Intellectual Property Center at Yamaguchi University, Japan

Source: https://www.wipo.int/meetings/en/details.jsp?meeting_id=84809

A special session discussed the Mickey Mouse dilemma (Hurtado 2018). That typically refers to a conceptual or metaphorical issue in various contexts, often highlighting a dilemma or tension related to cultural, legal, or intellectual property matters. The dilemma concerns the Walt Disney Company's ongoing efforts to extend the copyright protection of its iconic character, Mickey Mouse. Mickey Mouse, first introduced in 1928, was initially set to enter the public domain after the original copyright term expired (75 years after creation, as per the law at the time). However,

Disney successfully lobbied for extensions, leading to the Sonny Bono Copyright Term Extension Act (1998), which extended the term to 95 years.

The dilemma creates a debate between preserving corporate profits and cultural exclusivity versus promoting the public domain, which is essential for creativity and innovation. This issue has been discussed in various articles and books, with notable coverage in legal and academic texts (references). The discussion highlights tensions between protecting creators' rights and fostering a robust public domain that fuels innovation. Critics argue that continuous extensions hinder creativity by limiting access to cultural touchstones.

Another issue discussed deeply in this session was that Artificial intelligence (AI) certification systems are becoming increasingly vital for professionals and organizations aiming to establish expertise and trust in AI technologies. Several prominent systems and organizations are leading the way in AI certification and assessment:

- Responsible AI Institute (RAI) https://www.responsible.ai/
The Responsible AI Institute offers independent conformity assessments to ensure AI systems align with ethical and regulatory standards. Their certifications focus on responsible AI practices, including fairness, transparency, and accountability, helping organizations demonstrate their commitment to ethical AI development

-Professional AI Certifications
Certifications like the Microsoft Certified: Azure AI Engineer Associate and the Google Professional Machine Learning Engineer Certification focus on equipping professionals with technical skills in specific platforms and tools. These programs validate expertise in building, training, and deploying AI models

-Academic Collaborations
Universities such as Berkeley, and institutions like MIT, offer AI-focused courses integrating practical and theoretical knowledge. Programs like "Designing and Building AI Products and Services" by MIT xPro emphasize user-centered AI development and ethical practices, while Berkeley's courses focus on strategic AI applications in business

-Industry-led Certifications
Companies such as NVIDIA provide certifications like the Jetson AI Certification for specialized skills in AI programming and deployment, often tailored for educators or specialists working with NVIDIA technologies

The key themes and discussions in the tenth session included in summary:

1 - Generative AI and Copyright: The session explored whether outputs from generative AI should qualify for copyright protection, given the lack of direct human creativity. It debated the "output problem" and the role of human involvement in IP eligibility. Discussions also covered copyright concerns related to training datasets and the reproduction of distinct artistic styles through AI models.

2 - Ethical and Legal Challenges: Experts addressed issues like AI's role in producing deepfakes and other unauthorized content that exploit voice, image, and likeness rights without consent. Participants considered how copyright law could adapt to these challenges.

3 - Industry Solutions and Collaboration: Panels focused on industry solutions for marking and authenticating AI-generated content to enhance transparency and protect creators. Technologies and initiatives, such as interoperable tools and monitoring mechanisms, were highlighted as potential ways to manage AI outputs effectively

4 - Broader Policy and Economic Implications: Discussions touched on the economic opportunities and risks posed by generative AI, including its potential to reshape the creative landscape and disrupt traditional markets. Policymakers were encouraged to develop frameworks balancing innovation and protection.

5 - Global Perspectives: The session featured diverse voices, including legal professionals, technology experts, and cultural practitioners from different regions. Presentations showcased case studies, such as the implications of AI in the music and animation industries, and shared strategies from various jurisdictions.

3. Results of the 10th WIPO session

The event highlighted the urgent need for adaptive IP frameworks and collaboration across sectors to address the unique challenges and opportunities brought about by generative AI. Regarding the Reevaluation of Copyright Standards, the session underscored the necessity to redefine copyright frameworks in response to generative AI outputs, where the traditional requirement of human creativity is challenged. Proposals included establishing hybrid IP models that acknowledge human-AI collaboration.

Regarding consensus on transparency tools, the participants advocated for the development and implementation of tools to label and authenticate AI-generated content. This initiative aims to safeguard creators' rights and ensure transparency in content dissemination. Discussions highlighted the potential role of blockchain and metadata tagging in these solutions.

On Economic and Ethical Considerations or ethical obligations, the session explored mechanisms like "pay-per-use" models for AI training datasets, ensuring fair compensation for original content creators.

On Global Collaboration and Policy Harmonization, the session highlighted the need for international cooperation to develop harmonized IP policies addressing the global nature of AI technologies. Participants suggested creating a unified set of principles guiding the use and protection of AI-generated works.

On sector-specific challenges and solutions, the session discussed tailored approaches for sectors like music, animation, and visual arts in exploring the idea of embedding transparency and IP protection mechanisms into the creative pipeline.

There were discussed also some action points:

-Enhanced Legal Frameworks: Recommendations included revising IP laws to address generative AI's unique challenges and exploring new rights, such as "machine-generated rights," while avoiding overregulation that could stifle innovation

-Educational Initiatives: WIPO was encouraged to lead global campaigns and training sessions on the implications of generative AI for IP, targeting creators, legal professionals, and policymakers WIPO

-Technical Standard Development: Collaborative efforts to create international standards for identifying and managing AI-generated content were prioritized. That includes improving the interoperability of existing technological solutions.

-Engagement with Marginalized Groups: Discussions emphasized ensuring equitable benefits of AI technologies, particularly for artists and creators in developing regions. Was also suggested Capacity-building initiatives and accessible tools as ways to bridge the digital divide.

A summary of Key Outcomes could be the following:

-Policy Proposals: Recommendations for revising global IP frameworks to include AI-generated works, focusing on striking a balance between innovation and protection.

-Educational Campaigns: Programs to raise awareness about IP issues related to frontier technologies among creators, policymakers, and the general public.

-Collaborative Tools: Development of technologies to monitor and authenticate AI-generated outputs, ensuring transparency and accountability in creative industries.

-Global Collaboration: Ongoing efforts to unify international approaches to managing AI-related IP challenges, addressing issues like cross-border use and enforcement.

3.4 Result interpretations

Even giving new evaluations and cases, the tenth session does not show any advance in a new direction to face the problems. The repetitive presentations of cases show a need to change directions and have new horizons in mind. We guess that the problem is the wide use of AI technology tools is free, and they need a little knowledge to be used. AI applications are used today as a programming language to manipulate objects.

The result is an increasing incorporation of AI and new technology tools in our day-by-day processes. Even people with no or poor education, and especially those because they don't need to learn anything but the few commands of the AI tool, are using these frontier technologies tools through smartphones (United States Copyright Office 2023, WIPO 2011, 2023a, 2023b).

Thus, the tools could be used to do something right or reduce our work time, increase productivity, steal copyrights, and clone cards to enter secured networks. If copying an art craft or a service without digital aids was difficult and time-wasting, today is easy to replicate or copy everything and have a reasonable outcome in a moment. That is right for copyrights (science, culture, music, art, ideas, etc.) and also for new machines and materials for industrial goods and services.

The real dilemma is that we praise innovations and productivity, but today, innovations and productivity are out of the control of industrial corporations and public administration. Financial markets are facing the pressure of cryptocurrency robot traders and new financial products. The sharing and information economy imposes digital corporations at the top of the most lucrative firms. Energy companies claimed to be at the top of the best, today some corporations like Microsoft, Nvidia, and Apple have changed that top list.

Jobs like professional computer gamers, hackers, influencers, and cyber security managers are between the new professions because of the metaverse and the network. Thus, the intellectual property system is an old idea that matches with the homo faber and not with the homo integration (or people and machine working together). Intellectual property is always right, but the innovation to be protected is not only the intellectual property made by a man or an organization of people.

Market-change innovation (following the OLSO manual and neoclassical economic Theory) disruptive and marginal is not anymore only a matter of people. The way innovations are running today is not the old economic development theory models. The market is not well defined between goods and services because the outcome of a job using AI or information technology is shared in the internet network with infinite changes and solutions. It is difficult to value and attribute value for little changes or a concentration of little changes that can provoke a new action.

New chaotic models will explain economic development and its variables. The free AI generative or frontier technology dilemma is similar to the Free software discussion. All software must be free as Richard Stallman wrote in the late 80s of the last century (Williams 2010). We underline the existence of the free kernel written by Linus Torvalds used today by millions of people around the world.

The increase in e-commerce is an example of the complexity of how difficult is to establish value chains or economic sectors when we refer to platforms like Amazon, Alibaba, etc. This corporation's core business is not to sell but to provide a platform and logistics. The core business is to manage and increase the millions of code lines to allow independent sellers and clients to exchange something (goods for money, products for clients, etc.). So everyone can participate in the business by buying and selling something even with no money because they buy something from a producer

low and find clients to sell high. In the end, if the value is positive it stands with the owner, except for the commission due to the platform.

How to value a product innovation or a marginal innovation of a product and the service done? There is no intellectual property of the system created by the owner of the business. In fact, many successful people with that new way to do business sell their experience and ideas with the network on "how to" or "Making" clips, increasing the network of a specialized company of video that pays this entrepreneur if they reach thousands of "likes".

Finally, another reason why the new economy lacks intellectual rights for innovations is the lack of protection and the fact that in a decade their business will certainly change or will be modified by new technologies (Arrow, K.J. 1962, Watt 2014, Acemoglu, D. and Restrepo, P. 2018, Varian 2018). The struggle for copyright is today a conflict between intellectual property that continues to be protected like Coca-Cola, Disney characters, or fashion marks than new business (Khan, 2005, Kizhner, I., Terras, M., Rumyantsev, M., Khokhlova, V., Demeshkova, E., Rudov, I., and Afanasieva, J. 2021, Reagan 2022, KHAN 2024).

New marks are launched into the market, and the cost of being perceived by the client is dramatically lower than in the past because of digital marketing. Thus, the marketing cost embedded into the mark in the past years must be deflated (as the immaterial capital value in the balance sheet). The immaterial capital given the mark intellectual property register was inflated or speculated and embedded into the financial market value of the share in the share market.

Today is another way around. Marks are valuable when the startup is scaled. Marketing is today more an operative cost than overhead, or in other words, the immaterial value of the mark is less brand campaign and more direct marketing.

4. Concluding remarks

The outcomes of the WIPO sessions aim to spread the discussion and expand the knowledge. A worldwide definition of rules depends on national governments or super national blocks, economic and political associations like the European Union or Mercosul. It is urgent to define rules and ethics for the new industrial and social development in front of innovative technologies that have big impacts.

Like the so-called first industrial revolution in the XVIII century technology will raise productivity for new goods and service availability in the market. But the number of people in the XVIII and the XXI centuries are different, and the impacts also on the environment should be oriented. We guess, learning from history, we will have less disruptive outcomes than the first revolution on health, environmental pollution, forest disruption, water pollution, and social diseases.

Even if the environmental impact of information technology is not as great as the Industrial Revolution the health and mental impacts are even greater. The danger is that a silent revolution, or a revolution of culture, will change our social relationships and the trend of economic globalization less developed countries and vulnerable parts of the people in every country. We guess the free software crusade that was forgotten and dismissed by the IP system will have a revival in the future today not only is possible to have software but also generative AI free. People can use information technology to create and innovate with good results without a property system and pay for using tools.

References

Acemoglu, D., & Restrepo, P. (2018). Artificial intelligence, automation, and work. In *The economics of artificial intelligence: An agenda* (pp. 197–236). University of Chicago Press. https://www.nber.org/system/files/working_papers/w24196/w24196.pdf

Arrow, K. J. (1962). Economic welfare and the allocation of resources for invention. In R. R. Nelson (Ed.), *The rate and direction of inventive activity: Economic and social factors* (pp. 609–626). Princeton University Press.

Aveni, A., & Ulisse, C. (2024). Conversas da Organização Mundial da Propriedade Intelectual (OMPI) sobre inteligência artificial. In *Instituições jurídicas, inovações de mercado e tecnologia* (pp. 36–43). Escola Superior Dom Helder Câmara – ESDHC. Disponível em http://www.conpedi.org.br

Aveni, A., & Faria Campos, L. (2024). Desafios e perspectivas da inteligência artificial na análise da concorrência do poder público. *Revista JRG de Estudos Acadêmicos*, *7*(14), jan.–jul.

Cuntz, A., & Peuckert, J. (2023). From hackers to start-ups: Innovation commons and local entrepreneurial activity. *Research Policy*, *52*(2), 104675.

Cuntz, A., Fink, C., & Stamm, H. (2024). Artificial intelligence and intellectual property: An economic perspective (*WIPO Economic Research Working Paper No. 77*). World Intellectual Property Organization.

Eco, U. (2015). *How to write a thesis*. MIT Press.

Hurtado, A. (2018). Protecting the Mickey Mouse ears: Moving beyond traditional campaign-style enforcement of intellectual property rights in China. *Fordham Intellectual Property, Media & Entertainment Law Journal*, *28*(2), 421. https://ir.lawnet.fordham.edu/iplj/vol28/iss2/5

Khan, B. Z. (2005). *The democratization of invention: Patents and copyrights in American economic development, 1790–1920*. Cambridge University Press.

Khan, F. A. (2024). Intellectual property rights for software, artificial intelligence and computer-related inventions: A comparative analysis. *Journal of Intellectual Property Rights, 29*(1).

Kizhner, I., Terras, M., Rumyantsev, M., Khokhlova, V., Demeshkova, E., Rudov, I., & Afanasieva, J. (2021). Digital cultural colonialism: Measuring bias in aggregated digitized content held in Google Arts and Culture. *Digital Scholarship in the Humanities*, *36*(3), 607–640.

Reagan, J. (2022). The tragedy of the creative commons: An analysis of how overlapping intellectual property rights undermine the use of permissive licensing. *Case Western Reserve Law Review*, *72*(4), 977. https://scholarlycommons.law.case.edu/caselrev/vol72/iss4/5

United States Copyright Office. (2023). *Copyright registration guidance: Works containing material generated by artificial intelligence*.

Varian, H. (2018). Artificial intelligence, economics, and industrial organization (*NBER Working Paper No. 24839*). NBER Working Paper Series.

Watt, R. (2014). The basic economic theory of copyright. In *Handbook on the economics of copyright* (pp. 9–25). Edward Elgar Publishing.

Williams, S. (2010). *Free as in freedom (2.0): Richard Stallman and the free software revolution* (2nd ed., R. M. Stallman, Ed.).

World Intellectual Property Organization (WIPO). (2011). *World intellectual property report: The changing face of innovation*. WIPO.

World Intellectual Property Organization (WIPO). (2023a). *Global innovation index 2023*. WIPO.

World Intellectual Property Organization (WIPO). (2023b). *AI inventions factsheet*. WIPO. https://www.wipo.int/export/sites/www/about-ip/en/frontier_technologies/pdf/WIPO_AI_Inventions_factsheet.pdf